

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

1. **(Currently Amended)** Tetrakisfluoroalkylborate salts A

tetrakisfluoroalkylborate salt of general formula (I)



wherein

$M^{n+}$  is a univalent, bivalent, or trivalent cation,

each of the ligands R are the same and straight-chained or branched, representing

$(C_xF_{2x+1})$ , with  $1 \leq x \leq 8$ , and

$n = 1, 2$  or  $3$ .

2. **(Currently Amended)** The tetrakisfluoroalkylborate salts A

tetrakisfluoroalkylborate salt according to claim 1, characterized in that wherein the  $M^{n+}$  cation is an alkali metal cation, ~~preferably a lithium, sodium or potassium cation, and more preferably a lithium cation.~~

3. **(Currently Amended)** The tetrakisfluoroalkylborate salts A

tetrakisfluoroalkylborate salt according to claim 1, characterized in that wherein the  $M^{n+}$  cation is a magnesium or aluminum cation.

4. **(Currently Amended)** The tetrakisfluoroalkylborate salts A

tetrakisfluoroalkylborate salt according to claim 1, characterized in that wherein  $M^{n+}$  is an

organic cation, preferably a nitrosyl cation, a nitryl cation, or an organic cation of general formula  $[N(R^7)_4]^+$ ,  $[P(N(R^7)_2)_kR_{4-k}]^+$ , with  $0 \leq k \leq 4$ , or  $[C(N(R^7)_2)_3]^+$ , wherein each of the residues  $R^7$  are the same or different, representing

H,

$C_oF_{2o+1-p-q}H_pA_q$ , or

A,

wherein

$1 \leq o \leq 10$ ,

$0 \leq p \leq 2o + 1$ ,

$0 \leq q \leq 2o + 1$ , and

A represents an aromatic residue optionally having heteroatoms, or a preferably 5- or 6-membered cycloalkyl residue.

**5. (Currently Amended) The tetrakisfluoroalkylborate salts A**

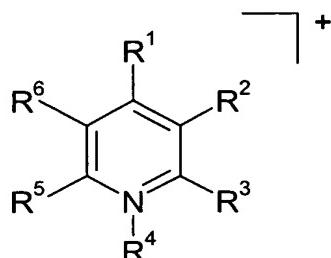
tetrakisfluoroalkylborate salt according to claim 4, characterized in that wherein  $1 \leq o \leq 6$ ,  $0 \leq p \leq 2o + 1$ , and  $0 \leq q \leq 2o + 1$ , and A represents an aromatic residue optionally having heteroatoms, or a preferably 5- or 6-membered cycloalkyl residue.

**6. (Currently Amended) The tetrakisfluoroalkylborate salts A**

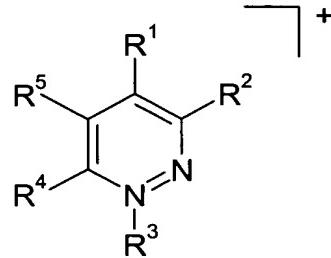
tetrakisfluoroalkylborate salt according to claim 4, characterized in that wherein A represents a 5- or 6-membered aromatic residue optionally including nitrogen and/or sulfur and/or oxygen atoms, or a preferably 5- or 6-membered cycloalkyl residue, preferably a phenyl or pyridine residue.

## 7. (Currently Amended)

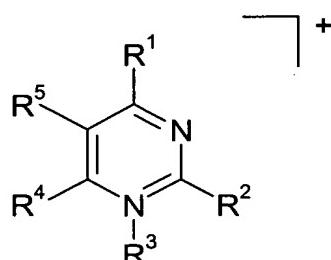
The ~~tetrakisfluoroalkylborate salts~~ A  
tetrakisfluoroalkylborate salt according to claim 1, characterized in that wherein M<sup>n+</sup> is a heteroaromatic cation of general formulas (II) to (IX):



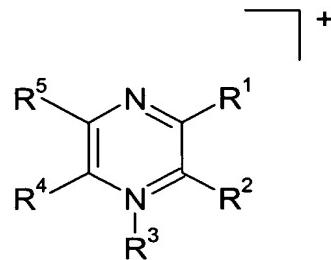
(II)



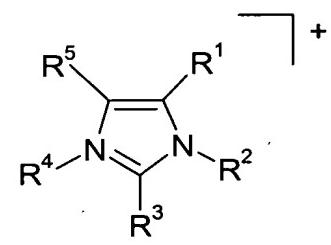
(III)



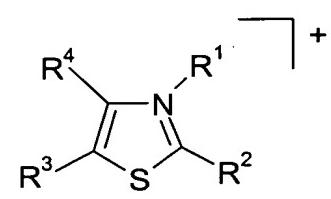
(IV)



(V)



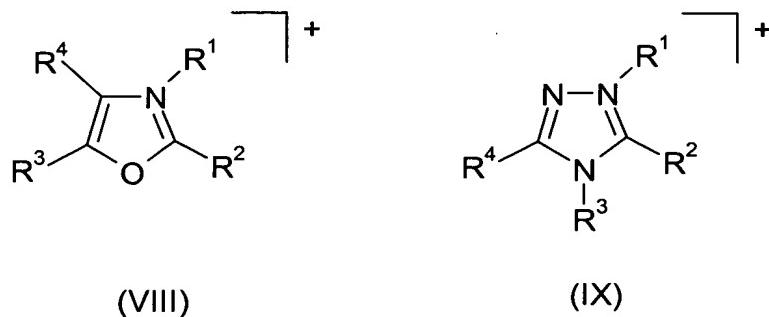
(VI)



(VII)

January 29, 2004

**Reply to Office Action of September 29, 2003**



wherein

the residues R<sup>1</sup> to R<sup>6</sup>, each of which is the same or different, and optionally two of the residues R<sup>1</sup> to R<sup>6</sup> together, represent H, a halogen, preferably fluorine, or a C<sub>1-8</sub> alkyl residue optionally substituted by F, Cl, N(C<sub>a</sub>F<sub>(2a+1-b)</sub>H<sub>b</sub>)<sub>2</sub>, O(C<sub>a</sub>F<sub>(2a+1-b)</sub>H<sub>b</sub>), SO<sub>2</sub>(C<sub>a</sub>F<sub>(2a+1-b)</sub>H<sub>b</sub>), or C<sub>a</sub>F<sub>(2a+1-b)</sub>H<sub>b</sub> wherein 1 ≤ a ≤ 6, and 0 ≤ b ≤ 2a+1.

8. (Currently Amended) The tetrakisfluoroalkylborate salts A tetrakisfluoroalkylborate salt according to claim 1, characterized in that each of wherein the ligands R are the same, representing  $(C_xF_{2x+1})$ , with x = 1 or 2.

9. (Currently Amended) The tetrakisfluoroalkylborate salts A  
tetrakisfluoroalkylborate salt according to claim 1, characterized in that wherein each of the ligands R are the same, representing a CF<sub>3</sub> residue.

10. (Currently Amended) A method of producing the a tetrakisfluoroalkylborate salts salt of claim 9, characterized in that wherein at least one compound of general formula (X)



is fluorinated by reacting with at least one fluorinating agent in at least one solvent, and the thus-obtained fluorinated compound having the general formula (I) is purified and isolated according to usual methods.

11. (Currently Amended) The A method according to claim 10, characterized in that wherein the reaction with the fluorinating agent is performed at a temperature ranging from -80 to +20°C, preferably from -60 to 0°C.

12. (Currently Amended) The A method according to claim 10, characterized in that wherein fluorine, chlorine fluoride, chlorine trifluoride, chlorine pentafluoride, bromine trifluoride, bromine pentafluoride, or a mixture of at least two of these fluorinating agents, preferably chlorine fluoride or chlorine trifluoride or a mixture of at least two fluorinating agents containing chlorine fluoride and/or chlorine trifluoride is used as a fluorinating agent.

13. (Currently Amended) The A method according to claim 10, characterized in that wherein hydrogen fluoride, iodine pentafluoride, dichloromethane, chloroform, or a mixture of at least two of these substances solvents, preferably hydrogen fluoride, is used as a solvent.

14. (Currently Amended) A mixture, including comprising:

- a) at least one tetrakisfluoroalkylborate salt of general formula (I) according to claim 1, and
- b) at least one polymer.

15. (Currently Amended) The A mixture according to claim 14, characterized in that wherein the mixture includes from 5 to 99 comprises 5 – 99 wt.-% of component a) and from 95 to 1 95 – 1 wt.-% of component b), preferably from 60 to 99 wt.-% of component a) and from 40 to 1 wt.-% of component b), each time relative to the sum of components a) and b).

16. (Currently Amended) The A mixture according to claim 14, characterized in that wherein a component b) is a homopolymer or copolymer of an unsaturated nitriles, preferably acrylonitrile, vinylidenes, preferably vinylidene difluoride, acrylates, preferably methyl acrylate, methacrylates, preferably methyl methacrylate, cyclic ethers, preferably tetrahydrofuran, alkylene oxides, preferably ethylene oxide, siloxane nitrile, a vinylidene, an acrylate, a methacrylate, a cyclic ether, an alkylene oxide, a siloxane, a phosphazene, alkoxy silanes an alkoxy silane, or an organically modified ceramic, or a mixture of at least two of the above-mentioned homopolymers and/or copolymers and optionally at least one organically modified ceramic.

17. (Currently Amended) The A mixture according to claim 16, characterized in that wherein the component b) is a homopolymer or copolymer of vinylidene difluoride, acrylonitrile, methyl (meth)acrylate, or tetrahydrofuran, and preferably a homopolymer or copolymer of vinylidene difluoride.

18. (Currently Amended) The A mixture according to claim 14, characterized in that wherein the polymer is at least partially crosslinked.

19. **(Currently Amended)** The A mixture according to claim 14, characterized in that wherein the mixture further comprises additionally includes at least one solvent.

20. **(Currently Amended)** The A mixture according to claim 19, characterized in that wherein a solvent is an organic carbonates, preferably ethylene carbonate, propylene carbonate, butylene carbonate, dimethyl carbonate, diethyl carbonate, ethyl methyl carbonate, or methyl propyl carbonate, organic esters, preferably methyl formate, ethyl formate, methyl acetate, ethyl acetate, methyl propionate, ethyl propionate, methyl butyrate, ethyl butyrate,  $\gamma$ -butyrolactone, organic ethers, preferably diethyl ether, dimethoxyethane, diethoxyethane, organic amides, preferably dimethylformamide or dimethylacetamide, sulfur-containing solvents, preferably dimethylsulfoxide, dimethyl sulfite, diethyl sulfite, or propanesultone, aprotic solvents, preferably acetonitrile, acrylonitrile, or acetone, carbonate, an organic ester, an organic ether, an organic amide, a sulfur-containing solvent, an aprotic solvent, or at least a partially fluorinated derivatives derivative of the above-mentioned solvents compounds, or a mixture mixtures of at least two of these solvents compounds and/or fluorinated derivatives of these solvents are present as solvents.

21. **(Currently Amended)** A method of producing a mixture according to claim 14, characterized in that wherein at least one tetrakisfluoroalkylborate salt of general formula (I)



wherein

$M^{n+}$  is a univalent, bivalent, or trivalent cation,

each of the ligands R are the same and straight-chained or branched, representing  
(C<sub>x</sub>F<sub>2x+1</sub>), with 1 ≤ x ≤ 8, and

n = 1, 2 or 3,

and at least one polymer and optionally at least one solvent are mixed.

22. **(Currently Amended)** The A method according to claim 21, characterized in  
that wherein said mixing is effected at an elevated temperature, preferably from 20 to 90°C,  
and more preferably from 40 to 60°C.

23. **(Canceled)**

24. **(Currently Amended)** Electrolytes, including An electrolyte comprising at  
least one tetrafluoroalkylborate of general formula (I) according to claim 1, or at least one  
mixture thereof with further comprising at least one polymer.

25. **(Currently Amended)** The electrolytes An electrolyte according to claim 24,  
characterized in that wherein the concentration of the tetrakisfluoroalkylborate salts(s) in the  
electrolyte is from 0.01 to 3 mol/l, preferably from 0.01 to 2 mol/l, and more preferably from  
0.1 to 1.5 mol/l.

26. **(Currently Amended)** Primary batteries, including A primary battery  
comprising at least one tetrafluoroalkylborate of general formula (I) according to claim 1 or  
at least one mixture thereof with further comprising at least one polymer.

27. **(Currently Amended)** ~~Secondary batteries, including A secondary battery comprising at least one tetrakisfluoroalkylborate of general formula (I) according to claim 1 or at least one mixture thereof with further comprising at least one polymer.~~

28. **(Currently Amended)** ~~Capacitors, including A capacitor comprising at least one tetrakisfluoroalkylborate of general formula (I) according to claim 1 or at least one mixture thereof with further comprising at least one polymer.~~

29. **(Currently Amended)** ~~Supercapacitors, including A supercapacitor comprising at least one tetrakisfluoroalkylborate of general formula (I) according to claim 1 or at least one mixture thereof with further comprising at least one polymer.~~

30. **(Currently Amended)** ~~Galvanic cells, including A galvanic cell comprising at least one tetrakisfluoroalkylborate of general formula (I) according to claim 1 or at least one mixture thereof with further comprising at least one polymer.~~

31. **(New)** A tetrakisfluoroalkylborate salt according to claim 1, wherein the  $M^{n+}$  cation is a lithium, sodium or potassium cation.

32. **(New)** A tetrakisfluoroalkylborate salt according to claim 1, wherein the  $M^{n+}$  cation is a lithium cation.

33. (New) A tetrakisfluoroalkylborate salt according to claim 1, wherein the  $M^{n+}$  cation is a nitrosyl cation, a nitryl cation, or an organic cation of general formula  $[N(R^7)_4]^+$ ,  $[P(N(R^7)_2)_kR_{4-k}]^+$ , with  $0 \leq k \leq 4$ , or  $[C(N(R^7)_2)_3]^+$ , wherein each of the residues  $R^7$  are the same or different, representing

H,

$C_oF_{2o+1-p-q}H_pA_q$ , or

A,

wherein

$1 \leq o \leq 10$ ,

$0 \leq p \leq 2o + 1$ ,

$0 \leq q \leq 2o + 1$ , and

A represents an aromatic residue optionally having heteroatoms, or a 5- or 6-membered cycloalkyl residue.

34. (New) A tetrakisfluoroalkylborate salt according to claim 4, wherein A is a phenyl or pyridine residue.

35. (New) A tetrakisfluoroalkylborate salt according to claim 7, wherein the halogen is fluorine.

36. (New) A method according to claim 10, wherein the reaction with the fluorinating agent is performed at -60 – 0°C.

37. (New) A method according to claim 10, wherein chlorine fluoride, chlorine trifluoride, or a mixture of at least two fluorinating agents comprising chlorine fluoride and/or chlorine trifluoride is used as a fluorinating agent.

38. (New) A method according to claim 10, wherein hydrogen fluoride is used as a solvent.

39. (New) A mixture according to claim 14, wherein the mixture comprises 60 – 99 wt.-% of component a) and from 40 – 1 wt.-% of component b).

40. (New) A mixture according to claim 16, wherein the unsaturated nitrile is acrylonitrile, the vinylidene is a vinylidene difluoride, the acrylate is a methyl acrylate, the methacrylate is a methyl methacrylate, the cyclic ether is a tetrahydrofuran, or the alkylene oxide is an ethylene oxide.

41. (New) A mixture according to claim 16, wherein the component b) is a homopolymer or copolymer of vinylidene difluoride.

42. (New) A mixture according to claim 20, wherein the organic carbonate is ethylene carbonate, propylene carbonate, butylene carbonate, dimethyl carbonate, diethyl carbonate, ethyl methyl carbonate, or methyl propyl carbonate; the organic ester is methyl formate, ethyl formate, methyl acetate, ethyl acetate, methyl propionate, ethyl propionate, methyl butyrate, ethyl butyrate, or  $\gamma$ -butyrolactone; the organic ether is diethyl ether, di-

methoxyethane, or diethoxyethane; the organic amide is dimethylformamide or dimethylacetamide; the sulfur-containing solvent is dimethylsulfoxide, dimethyl sulfite, diethyl sulfite, or propanesulfone; or the aprotic solvent is acetonitrile, acrylonitrile, or acetone.

**43. (New)** A method according to claim 21, wherein the mixing is effected at 20 – 90°C.

**44. (New)** A method according to claim 21, wherein the mixing is effected at 40 – 60°C.

**45. (New)** An electrolyte, a primary battery, a secondary battery, a capacitor, a supercapacitor, or a galvanic cell comprising at least one tetrakisfluoroalkylborate salt according to claim 1, or a mixture comprising at least one tetrakisfluoroalkylborate salt and at least one polymer, optionally in combination with other conducting salts and/or additives.

**46. (New)** An electrolyte according to claim 24, wherein the concentration of the tetrakisfluoroalkylborate salt(s) in the electrolyte is 0.01 – 2 mol/l.

**47. (New)** An electrolyte according to claim 24, wherein the concentration of the tetrakisfluoroalkylborate salt(s) in the electrolyte is 0.1 – 1.5 mol/l.

## 48. (New) A tetrakisfluoroalkylborate salt of formula (I)



wherein

$M^{n+}$  is a magnesium or aluminum cation;

each of the ligands R are the same and straight-chained or branched, representing

$(C_xF_{2x+1})$ , with  $1 \leq x \leq 8$ ; and

$n=1, 2$  or  $3$ .

## 49. (New) A tetrakisfluoroalkylborate salt of formula (I)



wherein

$M^{n+}$  is an organic cation;

each of the ligands R are the same and straight-chained or branched, representing

$(C_xF_{2x+1})$ , with  $1 \leq x \leq 8$ ; and

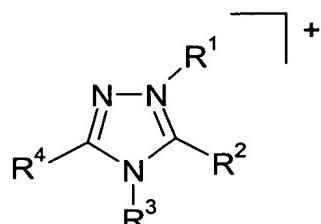
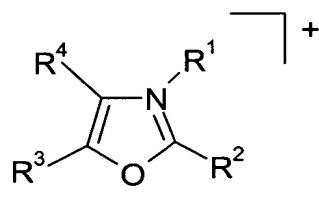
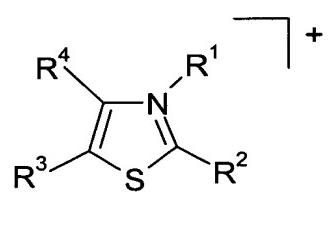
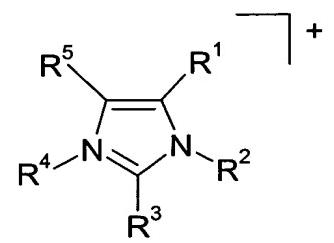
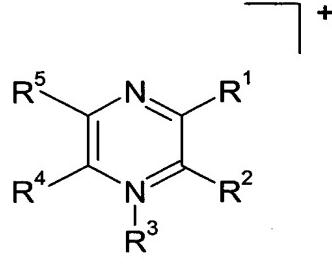
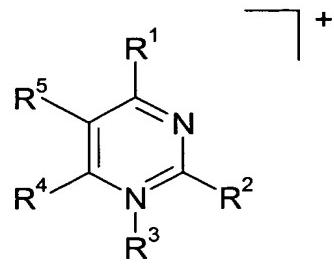
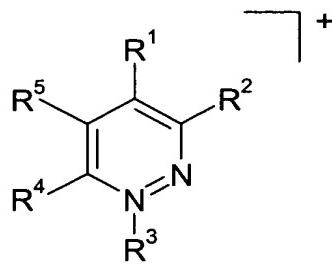
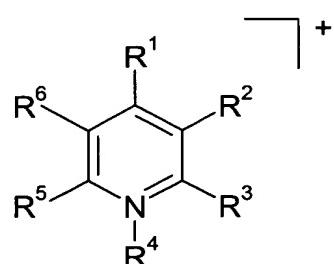
$n=1, 2$  or  $3$ .

## 50. (New) A tetrakisfluoroalkylborate salt of formula (I)



wherein

$M^{n+}$  is a heteroaromatic cation of general formulas (II) to (IX):



wherein

the residues R<sup>1</sup> to R<sup>6</sup>, each of which is the same or different, and optionally two of the residues R<sup>1</sup> to R<sup>6</sup> together, represent H, a halogen, or a C<sub>1-8</sub> alkyl residue optionally substituted by F, Cl, N(C<sub>a</sub>F<sub>(2a+1-b)</sub>H<sub>b</sub>)<sub>2</sub>, O(C<sub>a</sub>F<sub>(2a+1-b)</sub>H<sub>b</sub>), SO<sub>2</sub>(C<sub>a</sub>F<sub>(2a+1-b)</sub>H<sub>b</sub>), or C<sub>a</sub>F<sub>(2a+1-b)</sub>H<sub>b</sub> wherein 1 ≤ a ≤ 6, and 0 ≤ b ≤ 2a+1; each of the ligands R are the same and straight-chained or branched, representing (C<sub>x</sub>F<sub>2x+1</sub>), with 1 ≤ x ≤ 8; and  
n = 1, 2 or 3.

51. (New) A mixture comprising 5 – 99 wt.% of at least one tetrakisfluoroalkylborate salt of formula (I)



M<sup>n+</sup> is a univalent, bivalent, or trivalent cation,  
each of the ligands R are the same and straight-chained or branched, representing (C<sub>x</sub>F<sub>2x+1</sub>), with 1 ≤ x ≤ 8; and  
n = 1, 2 or 3; and  
95 – 1 wt.% of at least one polymer.